Cruise control (if equipped)

Use the cruise control to maintain a set speed without using the accelerator.

■ Set the vehicle speed

Press the "ON-OFF" button to activate the cruise control.

Press the button once more to deactivate the cruise control.

Accelerate or decelerate to the desired speed and push the lever down to set the speed.

Adjusting the speed setting

1 Increase speed.

2 Decrease speed.

Hold the lever until the desired speed setting is obtained.

Fine adjustment of the set speed can be made by lightly pushing the lever up or down and releasing it.

Canceling and resuming regular acceleration

1 Cancel

Push the lever towards you to cancel cruise control.

The speed setting is also canceled when the brakes are applied.

2 Resume

To resume cruise control and return to the set speed, push the lever up.

Resuming is available when vehicle speed is approximately 25 mph (40 km/h) or more.

Cruise control can be set when

- The shift lever is in “D” or the “4”, “5”, “6”, “7” or “8” range of “S” position.
- Vehicle speed is between approximately 25 mph (40 km/h) and 125 mph (200 km/h).

Accelerating

The vehicle can be accelerated normally.

- **Automatic cruise control cancellation**

  The cruise control will stop maintaining the vehicle speed in any of the following situations:

  - Actual vehicle speed falls more than 10 mph (16 km/h) below the preset vehicle speed.
    At this time, the memorized set speed is not retained.
  - Actual vehicle speed is below approximately 25 mph (40km/h).
  - VSC is activated.

- **If the cruise control indicator light flashes**

  Press the "ON-OFF" button once to deactivate the system, and then press the button again to reactivate the system.
  If the cruise control speed cannot be set or if the cruise control cancels immediately after being activated, there may be a malfunction in the cruise control system. Have the vehicle inspected by your Lexus dealer.

CAUTION

- **To avoid operating the cruise control by mistake**

  Keep the "ON-OFF" button off when not in use.

- **Situations unsuitable for cruise control**

  Do not use cruise control in any of the following situations.
  Doing so may result in control of the vehicle being lost and could cause serious or fatal accident.

  - In heavy traffic
  - On roads with sharp bends
  - On slippery roads, such as those covered with rain, ice or snow
  - On winding roads
  - On steep hills
    Vehicle speed may exceed the set speed when driving down a steep hill.

Dynamic radar cruise control (if equipped)

Dynamic radar cruise control supplements conventional cruise control with a vehicle-to-vehicle distance control. In the vehicle-to-vehicle distance control mode, the vehicle automatically accelerates or decelerates in order to maintain a set following distance from vehicles ahead.

n Set the vehicle speed

Press the "ON-OFF" button to activate the cruise control.

Press the button once more to deactivate the cruise control.

Accelerate or decelerate to the desired speed and push the lever down to set the speed.

Selecting conventional constant speed control mode

1 Press the “ON-OFF” button to activate the cruise control.

Press the button once more to deactivate the cruise control.

2 Switch to constant speed control mode.
(Push the lever away from you and hold for approximately one second.)

Vehicle-to-vehicle distance control mode is always reset when the “ENGINE START STOP” switch is switched to IGNITION ON mode.

■ Adjusting the speed setting

1 Increase speed.

2 Decrease speed.

Hold the lever until the desired speed setting is displayed.

Fine adjustment of the set speed can be made by lightly pushing the lever up or down and releasing it.

Canceling and resuming the speed setting

1 Cancel

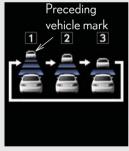
Push the lever towards you to cancel cruise control.

The setting is also canceled when the brakes are applied.

2 Resume

To resume cruise control and return to the set speed, push the lever up.

Resuming is available when vehicle speed is approximately 28 mph (45 km/h) or more.

Changing the vehicle-to-vehicle distance

Each press of the switch changes the vehicle-to-vehicle distance

1 Long

2 Medium

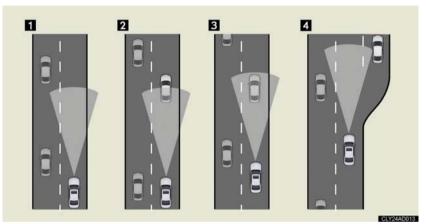
3 Short

The vehicle-to-vehicle distance is set automatically to the long mode when the "ENGINE START STOP" switch is switched to IGNITION ON mode.

A mark will be displayed to indicate the presence of the vehicle if a vehicle is running ahead of you.

Driving in vehicle-to-vehicle distance control mode

This mode employs a radar sensor to detect the presence of vehicles within approximately 400 ft. (120 m) ahead and to judge the distance between your vehicle and those vehicles.

Note that vehicle-to-vehicle distance will close in when traveling on long downhill slopes.

1 Example of constant speed cruising
When there are no vehicles ahead

The vehicle travels at the speed set by the driver. The desired vehicle-to-vehicle distance can also be set by operating the vehicle-to-vehicle distance switch.

2 Example of deceleration cruising
When the vehicle ahead is driving slower than the set speed

When a vehicle is detected running ahead of you, in the same lane, the system automatically decelerates your vehicle. When a greater reduction in vehicle speed is necessary, the system applies the brakes. A warning tone warns you if the system cannot decelerate sufficiently to prevent your vehicle from closing on the vehicle ahead.

3 Example of follow-up cruising

When following a vehicle driving slower than the set speed

The system continues follow-up cruising while adjusting for changes in the speed of the vehicle ahead in order to maintain the vehicle-to-vehicle distance set by the driver.

4 Example of acceleration

When there are no longer vehicles driving slower than the set speed in the lane ahead

When the vehicle ahead of you executes a lane change, the system slowly accelerates until the set vehicle speed is reached. The system then returns to fixed speed cruising.

Approach warning

When your vehicle is too close to a vehicle ahead, and sufficient automatic deceleration via the cruise control is not possible, the display will flash and buzzer will sound to alert the driver. An example of this would be if another driver cuts in front of you while you are following a vehicle. Apply the brakes to ensure an appropriate vehicle-to-vehicle distance.

Warning lights and messages for dynamic radar cruise control

Warning lights and messages are used to indicate a system malfunction or to inform the driver of the need for caution while driving. (→P. 639)

Switching modes

The mode cannot be switched to constant speed control mode if vehicle-to-vehicle distance control mode has been used. The mode also cannot be switched from constant speed control to vehicle-to-vehicle distance control mode. Turn the system off by pressing the “ON-OFF” button, and turn it on again.

The dynamic radar cruise can be set when

- The shift lever is in “D” or the “4”, “5”, “6”, “7” or “8” range of “S” position.
- Vehicle speed is between approximately 27 mph (43 km/h) and 87 mph (139 km/h).

Accelerating

The vehicle can be accelerated normally.

n **Automatically canceling vehicle-to-vehicle distance control**

Vehicle-to-vehicle distance control driving is automatically canceled in the following situations.

l Actual vehicle speed falls below 25 mph (40 km/h)

l VSC is activated

l The sensor cannot operate correctly because it is covered in some way.

l The windshield wipers are operating at high speed.

l The driving mode select switch is set to snow mode.

If vehicle-to-vehicle distance control driving is automatically canceled for any other reason, there may be a malfunction in the system. Contact your Lexus dealer.

n **Automatic cancelation of constant speed control**

The cruise control will stop maintaining the vehicle speed in the following situations:

l Actual vehicle speed is more than 10 mph (16 km/h) below the preset vehicle speed.
At this time, the memorized set speed is not retained.

l Actual vehicle speed falls below 25 mph (40 km/h).

l VSC is activated.

n **Vehicle-to-vehicle distance settings**

Select a distance from the table below. Note that the distances shown correspond to a vehicle speed of 50 mph (80 km/h). Vehicle-to-vehicle distance increases/decreases in accordance with vehicle speed.

Distance options	Vehicle-to-vehicle distance
Long	Approximately 164 ft. (50 m)
Medium	Approximately 132 ft. (40 m)
Short	Approximately 100 ft. (30 m)

■ **Radar sensor and grille**

Always keep the sensor and grille clean to ensure that the vehicle-to-vehicle distance control operates properly. (Some obstructions, such as snow, ice or plastic objects, cannot be detected by the obstruction sensor.)
Dynamic radar cruise control is canceled if an obstruction is detected.

Radar sensor

■ **Approach warning**

In the following instances, there is a possibility that the warnings will not occur:

- When the speed of the vehicle ahead matches or exceeds your vehicle's speed
- When the vehicle ahead is traveling at an extremely slow speed
- Immediately after the cruise control speed has been set
- At the instant the accelerator is applied

n **Certification**

▶ For vehicles sold in U.S.A.

FCC WARNING
Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

FCC RF exposure information
This device complies with the FCC RF exposure requirements.

▶ For vehicles sold in Canada

Operation is subject to the following two conditions;

(1) This device may not cause interference, and

(2) This device must accept any interference received, including interference that may cause undesired operation of the device.

CAUTION

n **Before using dynamic radar cruise control**

Do not overly rely on vehicle-to-vehicle distance control.
Be aware of the set vehicle speed. If automatic deceleration/acceleration is not appropriate, adjust the vehicle speed, as well as the distance between your vehicle and vehicles ahead by applying the brakes etc.

n **To avoid operating dynamic radar cruise control by mistake**

Keep the “ON-OFF” button off when not in use.

CAUTION

Situations unsuitable for dynamic radar cruise control

Do not use dynamic radar cruise control in any of the following situations.
Doing so may result in inappropriate control of speed and could cause serious or fatal accident.

- In heavy traffic
- On roads with sharp bends
- On winding roads
- On slippery roads, such as those covered with rain, ice or snow
- On steep downhills, or where there are sudden changes between sharp up and down gradients
  Vehicle speed may exceed the set speed when driving down a steep hill.
- At entrances to expressways
- When weather conditions are bad enough that they may prevent the sensors from functioning correctly (fog, snow, sandstorm, etc.)
- When the approach warning buzzer can be heard often

When the radar sensor may not be correctly detecting the vehicle ahead

Apply the brakes as necessary when any of the following types of vehicles are in front of you.
As the sensor may not be able to correctly detect these types of vehicles, the approach warning (→P. 189) will not be activated, and an accident may result.

- Vehicles that cut in suddenly
- Vehicles traveling at low speeds
- Vehicles that are not moving
- Vehicles with small rear ends (trailers with no load on board etc.)
- Motorcycles traveling in the same lane

CAUTION

Conditions under which the vehicle-to-vehicle distance control may not function correctly

Apply the brakes as necessary in the following conditions as the radar sensor may not be able to correctly detect vehicles ahead, and an accident may result:

- When water or snow thrown up by the surrounding vehicles hinders the functioning of the radar sensor
- When your vehicle is pointing upwards (caused by a heavy load in the trunk etc.)
- When the road curves or when the lanes are narrow
- When steering wheel operation or your position in the lane is unstable
- When the vehicle ahead of you decelerates suddenly

To ensure the radar sensor functions correctly

Do not do the following to the sensor or grille as doing so may cause the sensor not to function correctly and could result in an accident:

- Stick or attach anything to it
- Leave it dirty
- Disassemble, subject it to strong shocks
- Modify or paint it
- Replace it with a non-genuine part

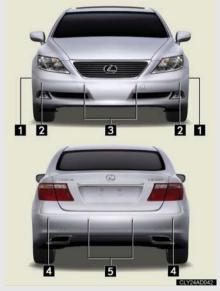
Handling the radar sensor

Observe the following to ensure the cruise control system can function effectively:

- Keep the sensor and front grille clean at all times.
  Clean the sensor and front grille with a soft cloth so you do not mark or damage them.
- Do not subject the sensor or surrounding area to a strong impact.
  If the sensor moves even slightly off position, the system may malfunction. If the sensor or surrounding area is subject to a strong impact, always have the area inspected and adjusted by a Lexus dealer.
- Do not disassemble the sensor.
- Do not attach accessories or stickers to the sensor, grille or surrounding area.
- Do not modify or paint the sensor and grille.

Intuitive parking assist-sensor (if equipped)

The distance to obstacles measured by the sensors is communicated via the multi-information display and a buzzer when parallel parking or maneuvering into a garage. Always check the surrounding area when using this system.

Types of sensors

1. Front side sensors
2. Front corner sensors
3. Front center sensors
4. Rear corner sensors
5. Rear center sensors

Intuitive parking assist switch

On/off

When on, the indicator light comes on and the buzzer sounds to inform the driver that the system is operational.

Press the button to switch the on/off mode.

Display

When the sensors detect an obstacle, the graphic is shown on the multi-information display and touch screen (if equipped) according to position and distance to the obstacle.

■ Multi-information display

1. Front side sensors and front corner sensors operation
2. Front center sensors operation
3. Rear corner sensors operation
4. Rear center sensors operation

■ Touchscreen (if equipped)

When the vehicle is moving forward

The graphic is automatically displayed when an obstacle is detected. The screen can be set so that the graphic is not displayed. (→P. 201)

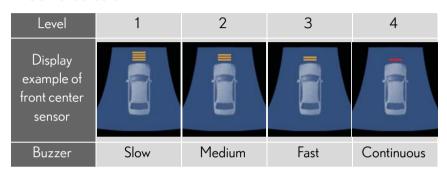
When the vehicle is moving backward

A simplified image is displayed on the right upper corner when an obstacle is detected.

The distance display and buzzer

When a sensor detects an obstacle, the direction of and the approximate distance to the obstacle are displayed and the buzzer sounds.

Center sensors

Level	1	2	3	4
Display example of front center sensor				
Buzzer	Slow	Medium	Fast	Continuous

Corner sensors and side sensors

Level	1	2	3	4
Display example of front right sensor	-			
Buzzer	-	Medium	Fast	Continuous

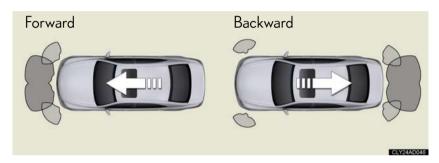
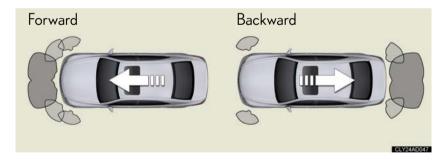
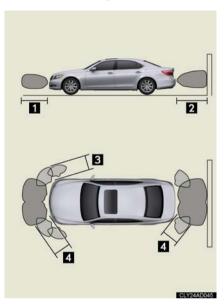
n Detection level and approximate distance to an obstacle

Level	1	2	3	4
Front side sensors	-	1.5 to 1.1 ft. (50 to 37.5 cm)	1.1 to 1.0 ft. (37.5 to 30 cm)	1.0 ft. (30 cm) or less
Front corner sensors	-	1.8 to 1.1 ft. (60 to 37.5 cm)	1.1 to 1.0 ft. (37.5 to 30 cm)	1.0 ft. (30 cm) or less
Front center sensors	3.0 to 1.5 ft. (100 to 50 cm)	1.5 to 1.1 ft. (50 to 37.5 cm)	1.1 to 1.0 ft. (37.5 to 30 cm)	1.0 ft. (30 cm) or less
Rear corner sensors	-	1.8 to 1.1 ft. (60 to 37.5 cm)	1.1 to 0.8 ft (37.5 to 25 cm)	0.8 ft. (25 cm) or less
Rear center sensors	4.5 to 2.0 ft. (150 to 60 cm)	2.0 to 1.4 ft. (60 to 45 cm)	1.4 to 1.1 ft. (45 to 35 cm)	1.1 ft. (35 cm) or less

Sensors that operate and detection range

The following diagrams show the sensor detection range. Note that sensors may not be able to detect obstacles that are extremely close to the vehicle.

Sensors that operate

▶ Vehicles with advanced parking guidance system

▶ Vehicles without advanced parking guidance system

■ Detection range of the sensors

1. Approx. 3.0 ft. (100 cm)
2. Approx. 4.5 ft. (150 cm)
3. Approx. 1.5 ft. (50 cm)
4. Approx. 2.0 ft. (60 cm)

The diagram shows the detection range of the sensors. Note that the sensors may not be able to detect obstacles that are extremely close to the vehicle.

The range of the sensors may change depending on the shape of the object etc.

Customization of the intuitive parking assist-sensor

▶ Vehicles with a touch screen

The buzzer volume, display and buzzer timing and display of the graphic on the screen can be customized.

Press INFO to display the information screen, and touch LEXUS Park Assist.

Buzzer volume

STEP 1 Touch Volume.

STEP 2 Touch a switch (from 1 to 5) to adjust the buzzer volume, and touch OK.

Display and buzzer timing

STEP 1 Touch Distance.

STEP 2 Set the display and buzzer timing for the front and the rear center sensors. When Front or Rear is touched, the triangle marks move between green (turns on at level 1) and orange (turns on at level 2) to select the timing.

Display of the graphic on the screen when the vehicle is moving forward

Touch Display OFF. When this switch is touched, display setting switches between on and off.

- **Sensor detection information**
  - Certain vehicle conditions and the surrounding environment may affect the ability of a sensor to correctly detect an obstacle. Particular instances where this may occur are listed below.
    - There is dirt, snow or ice on a sensor.
    - A sensor is frozen.
    - A sensor is covered in any way.
    - The vehicle is leaning considerably to one side.
    - On an extremely bumpy road, on an incline, on gravel, or on grass
    - The vicinity of the vehicle is noisy due to vehicle horns, motorcycle engines, air brakes of large vehicles, or other loud noises producing ultrasonic waves.
    - There is another vehicle equipped with parking assist sensors in the vicinity.
    - A sensor is coated with a sheet of spray or heavy rain.
    - The vehicle is equipped with a fender pole or radio antenna.
    - Towing eyelets are installed.
    - A bumper or sensor receives a strong impact.
    - The vehicle is approaching a tall or right-angled curb.
    - In harsh sunlight or intense cold weather.
    - A non-genuine Lexus suspension (lowered suspension, etc.) is installed.

  In addition to the examples above, there are instances in which, because of their shapes, signs and other objects may be judged by a sensor to be closer than they are.
  - The shape of the obstacle may prevent a sensor from detecting it. Pay particular attention to the following obstacles:
    - Wires, fences, ropes, etc.
    - Cotton, snow and other materials that absorb radio waves
    - Sharply-angled objects
    - Low obstacles
    - Tall obstacles with upper sections projecting outwards in the direction of your vehicle
- **If the display flashes and a message is displayed**

  →P. 630, 639
- **Certification (Canada only)**

  This ISM device complies with Canadian ICES-001.

Customization that can be configured at Lexus dealer (without a touch screen)

Settings (e.g. buzzer volume) can be changed. (Customizable features →P. 692)

 CAUTION

Caution when using the intuitive parking assist-sensor

Observe the following precautions.
Failing to do so may result in the vehicle being unable to be driven safely and possibly cause an accident.

- Do not use the sensor at speeds in excess of 6 mph (10 km/h).
- Do not attach any accessories within the sensor range.

Notes when washing the vehicle

Do not apply intensive bursts of water or steam to the sensor area.
Doing so may result in the sensor malfunctioning.

Electronically modulated air suspension (if equipped)

The vehicle adjusts the damping of the shock absorbers and maintains vehicle height automatically in response to driving conditions to help provide enhanced driving comfort and vehicle control.

Vehicle height adjustment

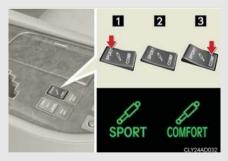
The vehicle's height is maintained at the selected level regardless of the number of occupants and luggage weight.

Turn the "HEIGHT HIGH" switch on.

The indicator light comes on.

Press the switch once more to cancel the high mode.

Damping mode selection

You can select the damping mode of the shock absorbers.

1 Sport
The indicator light comes on.

2 Normal

3 Comfort
The indicator light comes on.

Operating sound of the air suspension compressor

When the vehicle height is lowered, such as when entering or loading the vehicle, or high mode is selected, the compressor may operate and a whirring sound may be heard. This does not indicate a malfunction.

CAUTION

- **Be sure to stop the engine in the following situations in order to stop operation of the electronically modulated air suspension:**
  - The vehicle is parked on a curb.
  - Any of the wheels is stuck in a ditch.
  - It is necessary to jack up the vehicle.
  - It is necessary to tow the vehicle with part of it lifted.

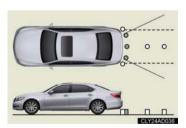
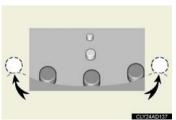
  If the “ENGINE START STOP” switch remains in IGNITION ON mode, the vehicle height may change, resulting in an accidental damage.

Rear view monitor system (if equipped)

The rear view monitor system assists the driver by displaying an image of the area behind the vehicle. The image is displayed in reverse on the screen. This reversed image is a similar image to the one on the inside rear view mirror.

For the advanced parking guidance system, refer to the “Navigation System Owner’s Manual”.

The rear view image is displayed when the shift lever is in the “R” position.

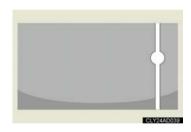
If the shift lever is shifted out of R, the screen returns to the previous one.

■ Displayed area

The area covered by the camera is limited. Objects that are close to either corner of the bumper or under the bumper cannot be seen on the screen.

The area displayed on the screen may vary according to vehicle orientation or road conditions.

Rear view monitor system camera

In the following cases, it may become difficult to see the images on the screen, even when the system is functioning correctly:

- The vehicle is in a dark area, such as at night.
- The temperature near the lens is extremely high or low.
- Water droplets are on the camera lens or humidity is high, such as when it rains.
- Foreign matter, such as snow or mud, adheres to the camera lens.
- The sun or headlights are shining directly into the camera lens.

Smear effect

If a bright light, such as sunlight reflected off the vehicle body, is picked up by the camera, a smear effect* characteristic to the camera may occur.

*: Smear effect — A phenomenon that occurs when a bright light is picked up by the camera; when transmitted by the camera, the light source appears to have a vertical streak above and below it.

CAUTION

- **When using the rear view monitor system, observe the following precautions to avoid an accident that could result in death or serious injuries:**
  - Never depend solely on the monitor system when reversing.
  - Always check visually and with the mirrors to confirm your intended path is clear.
  - Depicted distances between objects and flat surfaces differ from actual distances.
  - Do not use the system if the trunk is open.
- **Conditions which may affect the rear view monitor system**
  - If the back of the vehicle has been hit, the camera's position and mounting angle may have changed. Have the vehicle inspected by your Lexus dealer.
  - Rapid temperature changes, such as when hot water is poured on the vehicle in cold weather, may cause the system to function abnormally.
  - If the camera lens is dirty, it cannot transmit a clear image. Rinse with water and wipe with a soft cloth. If extremely dirty, wash with a mild cleanser and rinse.
  - The displayed image may be darker and moving images may be slightly distorted when the system is cold.

Driving assist systems

To help enhance driving safety and performance, the following systems operate automatically in response to various driving situations. Be aware, however, that these systems are supplementary and should not be relied upon too heavily when operating the vehicle.

ABS (Anti-lock Brake System)

Helps to prevent wheel lock when the brakes are applied suddenly, or if the brakes are applied while driving on a slippery road surface

Brake assist

Generates an increased level of braking force after the brake pedal is depressed, when the system detects a panic stop situation

VSC (Vehicle Stability Control)

Helps the driver to control skidding when swerving suddenly or turning on slippery road surfaces

TRAC (Traction Control)

Maintains drive power and prevents the rear wheels from spinning when starting the vehicle or accelerating on slippery roads

Hill-start assist control

Prevents the vehicle from rolling backwards when starting on an incline or slippery slope

VGRS (Variable Gear Ratio Steering) (if equipped)

Adjusts the wheel turning angle in accordance with the vehicle speed and steering wheel movement

EPS (Electric Power Steering)

Employs an electric motor to reduce the amount of effort needed to turn the steering wheel

n **VDIM (Vehicle Dynamics Integrated Management)**

Provides integrated control of the ABS, brake assist, TRAC, VSC, hill-start assist control, EPS, and VGRS (if equipped) systems
Maintains vehicle stability when swerving on slippery road surfaces by controlling the brakes and engine output, steering assist, and if equipped with VGRS, steering ratio

n **PCS (Pre-Collision System) (if equipped)**

→P. 215, 218

When the VSC/TRAC/hill-start assist control systems are operating

If the vehicle is in danger of slipping, rolling backward when starting on an incline, or if the rear wheels spin, the slip indicator light flashes to indicate that the VSC/TRAC/hill-start assist control systems have been engaged.

A buzzer (intermittent) sounds to indicate that VSC is operating.

The stop lights and high mounted stoplight turn on when the hill-start assist control system is operating.

The slip indicator light flashes as well when ABS is operating.

Disabling TRAC and/or VSC

If the vehicle gets stuck in fresh snow or mud, TRAC and VSC may reduce power from the engine to the wheels. You may need to turn the system off to enable you to rock the vehicle in order to free it.

- Turning off TRAC

Quickly press and release the switch to turn off TRAC.

The slip indicator light should come on.

Press the switch again to turn the system back on.

- Turning off TRAC and VSC

Press and hold the switch for more than 3 seconds while the vehicle is stopped to turn off TRAC and VSC.

The slip indicator light will come on and message will be shown on the multi-information display.

Press the switch again to turn the system back on.

■ **Automatic reactivation of TRAC and VSC**

Turning the "ENGINE START STOP" switch OFF after turning off the TRAC and VSC systems will automatically re-enable them.

■ **Automatic TRAC reactivation**

If only the TRAC system is turned off, the TRAC system will turn on when vehicle speed increases.

■ **Automatic TRAC/VSC reactivation**

If the TRAC/VSC systems are turned off, the systems will not turn on even when vehicle speed increases.

■ **Sounds and vibrations caused by the ABS, brake assist, VSC, TRAC, hill-start assist control and VGRS systems**

- A sound may be heard from the engine compartment when the engine is started or just after the vehicle begins to move. This sound does not indicate that a malfunction has occurred in any of these systems.
- Any of the following conditions may occur when the above systems are operating. None of these indicates that a malfunction has occurred.
  - Vibrations may be felt through the vehicle body and steering.
  - A motor sound may be heard after the vehicle comes to a stop.

■ **Hill-start assist control is operational when**

- The shift lever is in the "D" or "S" position.
- The brake pedal is not depressed.

■ **EPS operation sound**

When the steering wheel operates, a motor sound (whirring sound) may be heard. This does not indicate a malfunction.

■ **VGRS is disabled in the following situations**

The center position of the steering wheel may change when VGRS is disabled. However, the position will return to normal after VGRS is re-enabled.

- When the steering wheel has been operated for an extended period of time while the vehicle is stopped or is moving very slowly
- When the steering wheel has been held fully to the left or right
- When the battery is low or the voltage temporarily drops
- After the engine is started at lower than -22°F (-30°C).

n **Reduced effectiveness of EPS**

The effectiveness of EPS is reduced to prevent the system from overheating when there is frequent steering input over an extended period of time. The steering wheel may feel heavy as a result. Should this occur, refrain from excessive steering input or stop the vehicle and turn the engine off. The system should return to normal within 10 minutes.

CAUTION

n **The ABS does not operate effectively when**

- The limits of tire gripping performance have been exceeded.
- The vehicle hydroplanes while driving at high speed on a wet or slick road.

n **Stopping distance when the ABS is operating will exceed that of normal conditions**

The ABS is not designed to shorten the vehicle's stopping distance. Always maintain a safe distance from the vehicle in front of you in the following situations:

- When driving on dirt, gravel or snow-covered roads
- When driving with tire chains
- When driving over bumps in the road
- When driving over roads with potholes or roads with uneven roads

n **TRAC may not operate effectively when**

Directional control and power may not be achievable while driving on slippery road surfaces, even if the TRAC system is operating.
Do not drive the vehicle in conditions where stability and power may be lost.

n **If hill-start assist control does not operate effectively**

The hill-start assist control may not operate effectively on steep inclines and roads covered in ice.

CAUTION

■ **When the VSC is activated**

The slip indicator light flashes and a warning buzzer sounds. Always drive carefully. Reckless driving may cause an accident. Exercise particular care when the indicator light flashes and a buzzer sounds.

■ **When TRAC and VSC are off**

Be especially careful and drive at a speed appropriate to the road conditions. As these are systems to ensure vehicle stability and driving force, do not turn off TRAC and VSC unless necessary.

■ **Replacing tires**

Make sure that all tires are of the same size, brand, tread pattern and total load capacity. In addition, make sure that the tires are inflated to the recommended tire pressure level.

The ABS and VSC systems will not function correctly if different tires are fitted on the vehicle.
Contact your Lexus dealer for further information when replacing tires or wheels.

■ **Handling of tires and suspension**

Using tires with any kind of problem or modifying the suspension will affect the driving assist systems, and may cause the system to malfunction.

Pre-Collision System (if equipped)

Safety systems such as the brakes and seat belts are automatically engaged to lessen impact and injuries to occupants as well as vehicle damage when the radar sensor detects an unavoidable frontal collision.

■ Pre-collision seat belts

The front seat belts are immediately retracted as the effect of the pretensioner is increased (→P. 79) to help prepare the driver and front passenger. In the event of sudden braking or skidding, the system will operate even if no obstacle has been detected.

However, the system will not operate in the event of skidding when the TRAC/VSC systems are disabled.

■ Pre-collision brake assist

Applies greater braking force in relation to how strongly the brake pedal is depressed.

Radar sensor

Detects vehicles or other obstacles on or near the road ahead and determines whether a collision is imminent based on the position, speed, and heading of the obstacles.

■ Obstacles not detected

The sensor cannot detect plastic obstacles such as pylons. There may also be occasions when the sensor cannot detect pedestrians, animals, bicycles, motorcycles, trees, or snowdrifts.

The pre-collision system is operational when

- Pre-collision seat belt:
  - Vehicle speed is above 3 mph (5 km/h).
  - The relative speed difference between your vehicle and another vehicle that is forward of your vehicle, or the speed at your vehicle is approaching an obstacle is greater than 18 mph (30 km/h).
  - The front occupants are wearing a seat belt.
- Pre-collision brake assist:
  - Vehicle speed is above 18 mph (30 km/h).
  - The relative speed difference between your vehicle and another vehicle that is forward of your vehicle, or the speed at your vehicle is approaching an obstacle is greater than 18 mph (30 km/h).
  - The brake pedal is depressed.

Conditions that may trigger the system even if there is no danger of collision

- When there is an object by the roadside at the entrance to a curve
- When passing an oncoming vehicle on a curve
- When driving over a narrow iron bridge
- When there is a metal object on the road surface
- When driving on an uneven road surface
- When passing an oncoming vehicle on a left-turn
- When your vehicle rapidly closes on the vehicle in front

When the system is activated in the situations described above there is also a possibility that the seat belts will retract quickly and the brakes will be applied with a force greater than normal. When the seat belt is locked in the retracted position, stop the vehicle in a safe place, release the seat belt and refasten.

When there is a malfunction in the system

Warning lights and/or warning messages will turn on or flash. (→P. 630, 639)

Certification

▶ For vehicles sold in U.S.A.

FCC WARNING

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

FCC RF exposure information

This device complies with the FCC RF exposure requirements.

▶ For vehicles sold in Canada

Operation is subject to the following two conditions;

(1) This device may not cause interference, and

(2) This device must accept any interference received, including interference that may cause undesired operation of the device.

CAUTION

Handling the radar sensor

Observe the following to ensure the pre-collision system can function effectively:

- Keep the sensor and front grille clean at all times.
  Clean the sensor and front grille with a soft cloth so you do not mark or damage them.
- Do not subject the sensor or surrounding area to a strong impact.
  If the sensor moves even slightly off position, the system may malfunction. If the sensor or surrounding area is subject to a strong impact, always have the area inspected and adjusted by a Lexus dealer.
- Do not disassemble the sensor.
- Do not attach accessories or stickers to the sensor, grille or surrounding area.
- Do not modify or paint the sensor and grille.

Limitations of the pre-collision system

Do not rely on the pre-collision system. Always drive safely, taking care to observe your surroundings and checking for any obstacles or other road hazards.

Pre-Collision System with camera sensor (if equipped)

Safety systems such as the brakes and seat belts are automatically engaged to lessen impact and injuries to occupants as well as vehicle damage when the radar sensor detects an unavoidable frontal collision.

Pre-collision seat belts

The front seat belts are immediately retracted as the effect of the pretensioner is increased (→P. 79) to help prepare the driver and front passenger. In the event of sudden braking or skidding, the system will operate even if no obstacle has been detected.

However, the system will not operate in the event of skidding when the TRAC/VSC systems are disabled.

Pre-collision brake assist

When there is a high possibility of a frontal collision, the system applies greater braking force in relation to how strongly the brake pedal is depressed

Pre-collision braking

When there is a high possibility of a frontal collision, the system warns the driver using a warning light, warning display and buzzer. If the system determines that a collision is unavoidable, the brakes are automatically applied to reduce the collision speed. Pre-collision braking can be disabled using the pre-collision braking off button. (→P. 219)

Suspension control

When the system determines that a collision is unavoidable, the suspension switches to "SPORT" mode to help prevent the front of the vehicle from dropping when the brakes are applied suddenly

Steering gear control (VGRS)

When the system determines that a collision is unavoidable, the steering gear ratio is changed to help improve the response to steering input

Driver monitor system

When the system determines that there is a possibility of a collision, and the driver is not facing forward, PCS warnings are given in advance to warn the driver. In some circumstances, the brakes will be applied briefly to give a sensory warning to the driver (pre-collision alert braking).
(→P. 220)

Disabling pre-collision braking

1 Pre-collision braking disabled

2 Pre-collision braking enabled

The "PCS" warning light flashes when pre-collision braking is disabled.

Radar sensor

Detects vehicles or other obstacles on or near the road ahead and determines whether a collision is imminent based on the position, speed, and heading of the obstacles

Camera sensors

Detect pedestrians and other three-dimensional objects on or near the road ahead together with the radar sensor while the vehicle is moving. When the headlights are on, near-infrared rays are projected to ensure proper detection performance in the night time.

1 Camera sensors

2 Near-infrared ray transmitters

Driver monitor sensor

Detects the direction the driver is facing. The system determines whether the driver is facing forward.

n **Obstacles not detected**

The sensor cannot detect plastic obstacles such as pylons. There may also be occasions when the radar sensor cannot detect pedestrians, animals, bicycles, motorcycles, trees, or snowdrifts.

n **A camera sensor cannot detect obstacles in the following situations:**

l A camera sensor is directly receiving intense light, such as sunlight.

l Visibility is poor because of bad weather or other reasons.

l The sensor temperature is extremely high.

n **The pre-collision system is operational when**

l Pre-collision seat belts:

- Vehicle speed is above 3 mph (5 km/h).
- The relative speed difference between your vehicle and another vehicle that is forward of your vehicle, or the speed at which your vehicle is approaching an obstacle is greater than 18 mph (30 km/h).
- The front occupants are wearing a seat belt.

l Pre-collision brake assist:

- Vehicle speed is above 18 mph (30 km/h).
- The relative speed difference between your vehicle and another vehicle that is forward of your vehicle, or the speed at which your vehicle is approaching an obstacle is greater than 18 mph (30 km/h).
- The brake pedal is depressed.

l Pre-collision braking:

- The pre-collision braking off button is not pressed.
- Vehicle speed is above 9 mph (15 km/h).
- The relative speed difference between your vehicle and another vehicle that is forward of your vehicle, or the speed your vehicle is approaching an obstacle is greater than 12 mph (20 km/h).

l Suspension control:

- Vehicle speed is above 3 mph (5 km/h).
- The relative speed difference between your vehicle and another vehicle that is forward of your vehicle, or the speed at which your vehicle is approaching an obstacle is greater than 18 mph (30 km/h).

- Steering gear control (VGRS):
  - Vehicle speed is above 18 mph (30 km/h).
  - The relative speed difference between your vehicle and another vehicle that is forward of your vehicle, or the speed at which your vehicle is approaching an obstacle is greater than 18 mph (30 km/h).
- Pre-collision alert braking:
  - The pre-collision braking off button is not pressed.
  - The system determines that the driver is not facing forward.
  - Vehicle speed is above 24 mph (40 km/h).
  - The relative speed difference between your vehicle and another vehicle that is forward of your vehicle, or the speed at which your vehicle is approaching an obstacle is greater than 24 mph (40 km/h).
  - The steering is not being turned.

Conditions that may trigger the system even if there is no danger of collision

- When there is an object by the roadside at the entrance to a curve
- When passing an oncoming vehicle on a curve
- When driving over a narrow iron bridge
- When there is a metal object on the road surface
- When driving on an uneven road surface
- When passing an oncoming vehicle on a left-turn
- When your vehicle rapidly closes on the vehicle in front
- When your vehicle is skidding with the TRAC/VSC system off

When the system is activated in the situations described above, there is also a possibility that the seat belts will retract quickly and the brakes will be applied with a force greater than normal. When the seat belt is locked in the retracted position, stop the vehicle in a safe place, release the seat belt and refasten it.

When there is a malfunction in the system

Warning lights and/or warning messages will turn on or flash. (→P. 630, 639)

Certification

▶ For vehicles sold in U.S.A.

FCC WARNING
Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

FCC RF exposure information
This device complies with the FCC RF exposure requirements.

▶ For vehicles sold in Canada

Operation is subject to the following two conditions;

(1) This device may not cause interference, and

(2) This device must accept any interference received, including interference that may cause undesired operation of the device.

CAUTION

■ **Handling the radar sensor**

Observe the following to ensure the pre-collision system can function effectively:

- Keep the sensor and front grille clean at all times.
  Clean the sensor and front grille with a soft cloth so you do not mark or damage them.
- Do not subject the sensor or surrounding area to a strong impact.
  If the sensor moves even slightly off position, the system may malfunction. If the sensor or surrounding area are subject to a strong impact, always have the area inspected and adjusted by a Lexus dealer.
- Do not disassemble the sensor.
- Do not attach accessories or stickers to the sensor, grille or surrounding area.
- Do not modify or paint the sensor and grille.

■ **Handling the driver monitor sensor**

Observe the following to ensure the driver monitor sensor can function effectively.

Failure to do so may result in a malfunction or may prevent the system from correctly determining the direction the driver is facing.

- Do not disassemble, damage, lift or pull on the sensor.
- Do not touch the sensor while driving.
- Do not wet or spill water on the sensor.
- Do not drop anything on or allow anything to hit against the sensor. Do not subject the sensor to an impact.
- Make sure that there are no scratches, dirt or stickers on the side of the sensor that faces the driver.
- Do not place any objects in front of the side of the sensor that faces the driver or cover the sensor.

CAUTION

- **Handling the camera sensors**

  Observe the following to ensure that the PCS functions correctly:

  - Keep the windshield clean at all times.
    PCS effectiveness may be reduced due to the presence of raindrops, condensation, ice or snow on the windshield.
  - Do not change the installation position of a camera sensor, or remove and reinstall it. The direction of a camera sensor is precisely adjusted.
  - When it is cold, using the heater with air blowing to the feet may allow the upper part of the windshield to fog up. This will have a negative effect on the images. In such a case, use the windshield defogger to provide warm, dry air to the windshield.
  - Do not place anything on the dashboard.
    Images reflected on the windshield may reduce the effectiveness of a camera sensor.
  - Do not attach a sticker or other items to the windshield near a camera sensor.

- **Determining the direction the driver is facing**

  The direction the driver is facing may not be determined correctly if any of the following conditions exist:

  - There is an object between the driver monitor sensor and the driver's face, such as when the sensor is blocked.
  - A part of the driver's face is covered.
  - The sensor or the driver's face is exposed to intense light such as sunlight.
  - The driving posture is improper.

- **Headlights**

  The near-infrared ray transmitter projects strong energy that is not visible. Although the transmitter normally turns off when the vehicle is stopped, never look into the headlights for your safety.

- **Limitations of the pre-collision system**

  Do not rely on the pre-collision system. Always drive safely, taking care to observe your surroundings and checking for any obstacles or other road hazards.

NOTICE

- **Camera sensors**

  Observe the following to ensure that the PCS functions correctly:

  - Do not subject a camera sensor to a strong impact or force, and do not disassemble a camera sensor.
  - Do not scratch camera lens, or let it get dirty.

- **Headlights**

  Observe the following to ensure proper near-infrared ray projection:

  - Keep the headlights clean at all times.
  - The detection performance may deteriorate if the high beams are misaligned or the high beams are inoperative.

- **Precautions for cleaning the driver monitor sensor**

  - Gently wipe the sensor with a soft cloth to prevent damage.
  - Wipe any excess dirt with a cloth dampened with neutral detergent, all liquids having been wringed out of the cloth. After that, wipe again with a dry cloth.
  - Do not use benzene, thinner, glass cleaners, wax, etc.